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WE CLAIM:

1. A data receiving method comprising:

receiving fields having a field sync segment and a plurality of data segments, wherein the field sync segments contain map and count information, wherein the map information designates locations of first and second data segments containing respective first and second data in the fields, and wherein the count information indicates a subsequent field in which the map information changes;

processing the map information to produce map outputs; and,

locating the first and second data segments according to the map outputs.

2. The data receiving method of claim 1 wherein frames each contain an even field and an odd field, wherein the map and count information in each of the even and odd fields comprises:

a current map to be used in locating the first and second data segments in received fields;

a next map to be used in locating the first and second data contained in the subsequent field; and,

a frame count indicating the subsequent field.

3. The data receiving method of claim 2 wherein the map and count information contained in one of the even fields and the odd fields is scrambled, and wherein the processing of the map information to produce map outputs comprises de-scrambling the scrambled map and count information.

4. The data receiving method of claim 3 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

5. The data receiving method of claim 2 wherein the processing of the map information to produce map outputs comprises averaging the map information contained in one of the odd fields with the map information contained in a corresponding one of the even fields to produce the map outputs.

6. The data receiving method of claim 5 wherein the map and count information contained in one of the even fields and the odd fields is scrambled, and wherein the processing of the map information to produce map outputs comprises de-scrambling the scrambled map and count information.

7. The data receiving method of claim 6 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

8. The data receiving method of claim 2 wherein the map and count information contained in each of the even and odd fields comprises $\{A_0\ B_0\ C_0\}$ and $\{A_e\ B_e\ C_e\}$, wherein $\{A_0\ B_0\ C_0\}$ contains the current map and part of the frame count, and wherein $\{A_e\ B_e\ C_e\}$ contains the next map and the rest of the frame count.

9. The data receiving method of claim 8 wherein the map and count information contained in each of the even and odd fields further comprises first, second, and third Kerdock Code vectors, wherein the first Kerdock Code vector comprises $\{A_0\ B_0\ P_1\}$, wherein the second Kerdock Code vector comprises $(C_0\ A_e\ P_2)$, and wherein the third Kerdock Code vector comprises $\{B_e\ C_e\ P_3\}$, wherein P_1, P_s, and P_3 are corresponding sets of parity bits.

10. The data receiving method of claim 9 further comprising decoding the first, second, and third Kerdock Code vectors by use of a 16/8 Kerdock decoder.

11. The data receiving method of claim 10 wherein decoding relies on data elements substantially as set out in Appendix A.

12. The data receiving method of claim 10 wherein decoding relies on data elements substantially as set out in Appendix B.

13. The data receiving method of claim 1 wherein the processing of the map information to produce map outputs comprises Kerdock decoding the map and count information.

14. The data receiving method of claim 1 wherein frames each comprises an odd field and an even field, and wherein the map and count information comprises:

a current map and part of a frame count contained in one of the odd fields and the even fields; and,

a next map and the rest of the frame count contained in the other of the odd fields and the even fields, wherein the current map is used to locate the first and second data segments contained in received fields, wherein the next map is used to locate the first and second data segments contained in the subsequent field, and wherein the frame count indicates the subsequent field.

15. The data receiving method of claim 14 wherein the map and count information contained in one of the even and odd fields comprises $\{A_0\ B_0\ C_0\}$, wherein the map and count information contained in the other of the even and odd fields comprises $\{A_e\ B_e\ C_e\}$, wherein $\{A_0\ B_0\ C_0\}$ contains the current map and part of the frame count, and wherein $\{A_e\ B_e\ C_e\}$ contains the next map and the rest of the frame count.

16. The data receiving method of claim 15 wherein $\{A_0\ B_0\ C_0\}$ comprises a first 64 bit Kerdock Code vector, and wherein $\{A_e\ B_e\ C_e\}$ comprises a second 64 bit Kerdock Code vector.

17. The data receiving method of claim 16 further comprising inverting only one of the first and second 64 bit Kerdock code vectors.

18. The data receiving method of claim 17 further comprising combining the inverted one of the first and second 64 bit Kerdock code vectors and the non-inverted one of the first and second 64 bit Kerdock code vectors.

19. The data receiving method of claim 16 further comprising decoding the first and second Kerdock code vectors by use of a 64/12 Kerdock decoder.

20. The data receiving method of claim 14 wherein the processing of the map information to produce map outputs comprises Kerdock decoding the map and count information.

21. The data receiving method of claim 14 further comprising inverting only one of the current and next maps.

22. The data receiving method of claim 21 further comprising combining the inverted one of the current and next maps and the non-inverted one of the current and next maps.

23. A data receiving method comprising:

receiving frames having frame sync segments and data segments, wherein each of the frame sync segments contains map and count information, wherein the map information designates locations of first and second data segments containing respective first and second data in

the frames, and wherein the count information indicates a subsequent frame in which the map information changes, and wherein the map and count information is encoded;

decoding the map and count information;

storing the decoded map and count information in a memory; and,

locating the first and second data segments in received frames according to the decoded map information.

24. The data receiving method of claim 23 wherein the decoding of the map and count information comprises providing a reliability indication specifying the reliability with which the map and count information is decoded, wherein the storing of the decoded map and count information comprises:

storing the map information in the memory only if the reliability indication is sufficiently high and otherwise not changing the memory; and,

storing the count information in the memory only if the reliability indication is sufficiently high and otherwise changing the count information in response to a frame sync signal.

25. The data receiving method of claim 24 wherein the frames each contain an even field and an odd field, wherein the map and count information in each of the even and odd fields comprises:

a current map to be used in locating the first and second data segments in received fields;

a next map to be used in locating the first and second data contained in the subsequent field; and,

a frame count indicating the subsequent field.

26. The data receiving method of claim 25 wherein the map and count information contained in one of the even fields and the odd fields is scrambled, and wherein the decoding of the map and count information comprises de-scrambling the scrambled map and count information.

27. The data receiving method of claim 26 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count

information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

28. The data receiving method of claim 25 wherein the decoding of the map and count information comprises averaging the map information contained in one of the odd fields with the map information contained in a corresponding one of the even fields.

29. The data receiving method of claim 28 wherein the map and count information contained in one of the even fields and the odd fields is scrambled, and wherein the decoding of the map and count information comprises de-scrambling the scrambled map and count information.

30. The data receiving method of claim 29 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

31. The data receiving method of claim 25 wherein the map and count information contained in each of the even and odd fields comprises $\{A_0\ B_0\ C_0\}$ and $\{A_e\ B_e\ C_e\}$, wherein $\{A_0\ B_0\ C_0\}$ contains the current map and part of the frame count, and wherein $\{A_e\ B_e\ C_e\}$ contains the next map and the rest of the frame count.

32. The data receiving method of claim 31 wherein the map and count information contained in each of the even and odd fields further comprises first, second, and third Kerdock Code vectors, wherein the first Kerdock Code vector comprises $\{A_0\ B_0\ P_1\}$, wherein the second Kerdock Code vector comprises $(C_0\ A_e\ P_2)$, and wherein the third Kerdock Code vector comprises $\{B_e\ C_e\ P_3\}$, wherein P_1, P_s, and P_3 are corresponding sets of parity bits.

33. The data receiving method of claim 32 further comprising decoding the first, second, and third Kerdock Code vectors by use of a 16/8 Kerdock decoder.

34. The data receiving method of claim 33 wherein decoding relies on data elements substantially as set out in Appendix A.

35. The data receiving method of claim 33 wherein decoding relies on data elements substantially as set out in Appendix B.

36. The data receiving method of claim 25 wherein the decoding of the map and count information comprises Kerdock decoding the map and count information.

37. The data receiving method of claim 36 wherein the map and count information contained in one of the even fields and the odd fields is scrambled, and wherein the decoding of the map and count information comprises de-scrambling the scrambled map and count information.

38. The data receiving method of claim 37 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12

13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

39. The data receiving method of claim 35 wherein the decoding of the map and count information comprises averaging the map information contained in one of the odd fields with the map information contained in a corresponding one of the even fields.

40. The data receiving method of claim 39 wherein the map and count information contained in one of the even fields and the odd fields is scrambled, and wherein the decoding of the map and count information comprises de-scrambling the scrambled map and count information.

41. The data receiving method of claim 40 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count

information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

42. The data receiving method of claim 36 wherein the Kerdock decoding of the map and count information comprises Kerdock decoding the map and count information by use of a 16/8 Kerdock decoder.

43. The data receiving method of claim 24 wherein each of the frames comprises an odd field and an even field, and wherein the map and count information comprises:

a current map and part of a frame count contained in one of the odd fields and the even fields; and,

a next map and the rest of the frame count contained in the other of the odd fields and the even fields, wherein the current map is used to locate the first and second data segments contained in received fields, wherein the next map is used to locate the first and second data segments contained in the subsequent field, and wherein the frame count indicates the subsequent field.

44. The data receiving method of claim 43 wherein the map and count information contained in one of the even and odd fields comprises $\{A_0\ B_0\ C_0\}$, wherein the map and count information contained in the other of the even and odd fields comprises $\{A_e\ B_e\ C_e\}$, wherein $\{A_0\ B_0\ C_0\}$ contains the current map and part of the frame count, and wherein $\{A_e\ B_e\ C_e\}$ contains the next map and the rest of the frame count.

45. The data receiving method of claim 44 wherein $\{A_0\ B_0\ C_0\}$ comprises a first 64 bit Kerdock Code vector, and wherein $\{A_e\ B_e\ C_e\}$ comprises a second 64 bit Kerdock Code vector.

46. The data receiving method of claim 45 further comprising inverting only one of the first and second 64 bit Kerdock code vectors.

47. The data receiving method of claim 46 further comprising combining the inverted one of the first and second 64 bit Kerdock code vectors and the non-inverted one of the first and second 64 bit Kerdock code vectors.

48. The data receiving method of claim 45 further comprising decoding the first and second Kerdock Code vectors by use of a 64/12 Kerdock decoder.

49. The data receiving method of claim 43 wherein the processing of the map information to produce map outputs comprises Kerdock decoding the map and count information.

50. The data receiving method of claim 49 wherein the Kerdock decoding of the map and count information comprises Kerdock decoding the map and count information by use of a 64/12 Kerdock decoder.

51. The data receiving method of claim 43 further comprising inverting only one of the current and next maps.

52. The data receiving method of claim 51 further comprising combining the inverted one of the current and next maps and the non-inverted one of the current and next maps current and next maps.

53. A data transmitting method comprising:

inserting map and count information into field sync segments of fields also containing data segments, wherein the map information designates locations of first and second data segments containing respective first and second data in the fields, and wherein the count information indicates a subsequent field in which the map information changes;

inserting the first and second data in the respective first and second data segments as designated by the map information; and,

transmitting the fields.

54. The data transmitting method of claim 53 wherein frames comprise even and odd fields, wherein the inserting of map and count information into field sync segments of fields comprises inserting the map and count information into field sync segments of the even and odd fields, wherein the map information inserted into the even fields and into the odds fields comprises:

a current map to be used in locating the first and second data contained in transmitted fields;

a next map to be used in locating the first and second data contained in the subsequent field; and,

a frame count indicating the subsequent field..

55. The data transmitting method of claim 54 further comprising scrambling the map and count information, and wherein the inserting of map and count information into field sync segments of fields comprises inserting the scrambled map and count information into the field sync segment of one of the even fields and the odd fields.

56. The data transmitting method of claim 55 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

57. The data transmitting method of claim 54 wherein the map and count information contained in each of the even and odd fields comprises $\{A_0\ B_0\ C_0\}$ and $\{A_e\ B_e\ C_e\}$, wherein $\{A_0\ B_0\ C_0\}$ contains the current map and part of the frame count, and wherein $\{A_e\ B_e\ C_e\}$ contains the next map and the rest of the frame count.

58. The data transmitting method of claim 57 wherein the map and count information contained in each of the even and odd fields further comprises first, second, and third Kerdock Code vectors, wherein the first Kerdock Code vector comprises $\{A_0\ B_0\ P_1\}$, wherein the second Kerdock Code vector comprises $(C_0\ A_e\ P_2)$, and wherein the third Kerdock Code vector comprises $\{B_e\ C_e\ P_3\}$, wherein P_1, P_s, and P_3 are corresponding sets of parity bits.

59. The data transmitting method of claim 58 further comprising decoding the first, second, and third Kerdock Code vectors by use of a 16/8 Kerdock decoder.

60. The data transmitting method of claim 59 wherein decoding relies on data elements substantially as set out in Appendix A.

61. The data transmitting method of claim 59 wherein decoding relies on data elements substantially as set out in Appendix B.

62. The data transmitting method of claim 53 wherein frames each comprises an odd field and an even field, and wherein the map and count information comprises:

a current map and part of a frame count contained in one of the odd fields and the even fields; and,

a next map and the rest of the frame count contained in the other of the odd fields and the even fields, wherein the current map is used to locate the first and second data contained in the transmitted fields, wherein the next map is used to locate the first and second data contained in the subsequent field, and wherein the frame count indicates the subsequent field.

63. The data transmitting method of claim 62 wherein the map and count information contained in one of the even and odd fields comprises $\{A_0\ B_0\ C_0\}$, wherein the map and count information contained in the other of the even and odd fields comprises $\{A_e\ B_e\ C_e\}$, wherein $\{A_0\ B_0\ C_0\}$ contains the current map and part of the frame count, and wherein $\{A_e\ B_e\ C_e\}$ contains the next map and the rest of the frame count.

64. The data transmitting method of claim 63 wherein $\{A_0\ B_0\ C_0\}$ comprises a first 64 bit Kerdock Code vector, and wherein $\{A_e\ B_e\ C_e\}$ comprises a second 64 bit Kerdock Code vector.

65. The data transmitting method of claim 64 further comprising inverting only one of the first and second 64 bit Kerdock code vectors.

66. The data transmitting method of claim 64 further comprising decoding the first and second Kerdock Code vectors by use of a 64/12 Kerdock decoder.

67. The data transmitting method of claim 62 further comprising inverting only one of the current and next maps.

68. The data transmitting method of claim 53 wherein the inserting of map and count information into field sync segments of fields comprises encoding the map and count information and inserting the encoded map and count information into the field sync segments of fields.

69. The data transmitting method of claim 68 wherein frames comprise even and odd fields, wherein the inserting of map and count information into field sync segments of fields comprises inserting the map and count information into field sync segments of the even and odd fields, wherein the map information inserted into the even fields and into the odds fields comprises:

a current map to be used in locating the first and second data contained in transmitted fields;

a next map to be used in locating the first and second data contained in the subsequent field; and,

a frame count indicating the subsequent field..

70. The data transmitting method of claim 69 further comprising scrambling the map and count information, and wherein the inserting of map and count information into field sync segments of fields comprises inserting the scrambled map and count information into the field sync segment of one of the even fields and the odd fields.

71. The data transmitting method of claim 70 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

72. The data transmitting method of claim 69 wherein the encoding of the map and count information comprises Kerdock encoding the map and count information.

73. The data transmitting method of claim 72 wherein the Kerdock encoding of the map and count information comprises Kerdock encoding of the map and count information by use of a 16/8 Kerdock encoder.

74. The data transmitting method of claim 72 further comprising scrambling the map and count information, and wherein the inserting of map and count information into field sync segments of fields comprises inserting the scrambled map and count information into the field sync segment of one of the even fields and the odd fields.

75. The data transmitting method of claim 74 wherein the map and count information contained in the other of the even field and the odd field is unscrambled, wherein the unscrambled map and count information comprises the sequence of 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16, and wherein the scrambled map and count information comprises the sequence of 13 9 5 1 14 10 6 2 15 11 7 3 16 12 8 4.

76. The data transmitting method of claim 68 wherein frames each comprises an odd field and an even field, and wherein the map and count information comprises:

a current map and part of a frame count contained in one of the odd fields and the even fields; and,

a next map and the rest of the frame count contained in the other of the odd fields and the even fields, wherein the current map is used to locate the first and second data contained in the transmitted fields, wherein the next map is used to locate the first and second data contained in the subsequent field, and wherein the frame count indicates the subsequent field.

77. The data transmitting method of claim 76 wherein the encoding of the map and count information comprises Kerdock encoding the map and count information.

78. The data transmitting method of claim 76 further comprising inverting only one of the first and second 64 bit Kerdock code vectors.

79. The data transmitting method of claim 76 wherein the Kerdock encoding of the map and count information comprises Kerdock encoding of the map and count information by use of a 64/12 Kerdock encoder.

80. The data transmitting method of claim 76 further comprising inverting only one of the current and next maps.

81. A data receiving method comprising:

receiving current and next maps in corresponding fields of an ATSC compliant signal, wherein the current map indicates location of data in a current field and the next map indicates location of data in subsequent field;

inverting only one of the current and next maps;

combining the inverted one of the current and next maps and the non-inverted other of the current and next maps; and,

determining map information from the combined maps.

82. The data receiving method of claim 81 wherein the received current and next maps are in the form of Kerdock code vectors.

83. The data receiving method of claim 82 wherein the Kerdock code vectors each comprises a 64 bit Kerdock code vector representing 12 bits of data.

84. The data receiving method of claim 83 wherein the 12 bits comprises at least some bits that represent a count down.

85. The data receiving method of claim 83 wherein the 12 bits represented by the Kerdock code vector corresponding to the current map comprises a portion of a count down, and wherein the 12 bits represented by the Kerdock code vector corresponding to the next map comprises the remainder of the count down.

86. The data receiving method of claim 81 wherein the determining of the map information comprises correlating the received current and next maps with stored vectors.

87. The data receiving method of claim 86 wherein the received current and next maps are in the form of Kerdock code vectors, and wherein the stored vectors are Kerdock code vectors.

88. The data receiving method of claim 87 wherein the Kerdock code vectors each comprises a 64 bit Kerdock code vector representing 12 bits of data.

89. The data receiving method of claim 88 wherein the 12 bits comprises at least some bits that represent a count down.

90. The data receiving method of claim 88 wherein the 12 bits represented by the Kerdock code vector corresponding to the current map comprises a portion of a count down, and wherein the 12 bits represented by the Kerdock code vector corresponding to the next map comprises the remainder of the count down.

91. A data transmitting method comprising:

inverting only one of a current map and a next map, wherein the current map indicates location of data in a current field and the next map indicates location of data in subsequent field;

inserting the non-inverted one of the current map and the next map and the inverted one of the current map and the next map into corresponding fields; and,

transmitting the fields.

92. The data transmitting method of claim 91 further comprising encoding the non-inverted one of the current map and the next map and the inverted one of the current map and the next map as corresponding Kerdock code vectors.

93. The data transmitting method of claim 92 wherein the Kerdock code vectors each comprises a 64 bit Kerdock code vector representing 12 bits of data.

94. The data transmitting method of claim 93 wherein the 12 bits comprises at least some bits that represent a count down.

95. The data transmitting method of claim 93 wherein the 12 bits represented by the Kerdock code vector corresponding to the current map comprises a portion of a count down, and wherein the 12 bits represented by the Kerdock code vector corresponding to the next map comprises the remainder of the count down.